MPX-MD Series

User Manual

FCC Statement

This device complies with part 15 FCC rules. Operation is subject to the following two conditions：

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a class "a" digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at him own expense.

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This User's Guide requires higher than basic understanding of computer and MPX-MD SERIES installation and configuration, and provides technical assistance for system and network administrators deploying the MPX-MD SERIES.

Any software described in this manual is sold or licensed "as is". Should the programs prove defective following their purchase, the buyer assumes the entire cost of all necessary servicing, repair, and any incidental or consequential damages resulting from any defect in the software.

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Unpacking the MPX-MD SERIES

After unpacking the MPX-MD SERIES carton, check to make sure all the following items are included and in good condition.

MPX-MD SERIES main system	x 1

Accessories:

AC Power Cable	x 1
Power Adapter	x 1
User guide CD & driver	x 1
Wall Mount Bracket (2pc)	x 1
In Wall Front Mount Locking Beads	x 1

Make sure that all of the items listed above are present. If any of the above items is missing, contact your supplier immediately.

Warranty

All products are warranted against defective materials for two year starting from the date of delivery to the original buyer.

Contact your supplier for a copy of the Warranty Policy & RMA Form .

Important Safety Precautions

1. Before getting started, read these instructions and save them for later reference.
2. Please disconnect this equipment from any AC outlet before cleaning. Clean with a damp or dry cloth only. Do not spray any liquid cleaner directly on the screen.
3. The power outlet socket used to plug in the computer power cord must be located near the system and easily accessible. Do not use outlets on the same circuit of the systems that are regularly switched on and off.
4. Do not expose the power cord, extension cord and power outlet to moisture or traffic intensive walkways.
5. Install the equipment on a sturdy and reliable surface to prevent damage caused by dropping.
6. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
7. If the Equipment is sharing an extension cord with other devices, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating.
8. If an operating system is not installed, an operating system must be loaded first before installing any software into the equipment.
9. Disconnect the power cord from the computer before any installation of internal components. Make sure both the computer and the external devices are turned off. A sudden surge of power may damage sensitive components. Also make sure the computer is properly grounded.
10. During installation of any internal components, be sure to ground yourself to discharge any static electricity. Most electronic components are highly sensitive to static electric charge. Use a grounding wrist strap and place all electronic components in any static-shielded devices. If a wrist-grounding strap is not available, ground your self by briefly touching an unpainted piece of metal.
11. The brightness of the flat panel display will decrease with use over long periods of time. However, hours of use will vary depending on the application environment.
12. If the equipment is equipped with a touch panel, avoid using sharp or metallic objects to operate the touch panel. Scratches on the touch panel may cause mal-calibration or serious damage to the panel.
13. The LCD panel display is not resistive to shock or vibration. When disassembling the equipment, make sure the LCD panel is properly and securely installed.

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Chapter 1 INTRODUCTION

This chapter includes the MPX-MD SERIES system background information.

- General Information
- Specification
- Dimensions

1.1 General Information

The MPX-MD SERIES is a fanless mini size panel PC with a compact aluminum chassis as a heat sink, which delivers reliable performance and offers easy maintenance when service is required.

Featuring Atom Cedar Trail processor, MPX-MD SERIES combines enhanced digital media performance with unique thermal solution, and minimizes power consumption to as little as 24 watts when running at the speed of Dual Core 1.8GHz, bringing up a quieter and cooler system.

The versatile MPX-MD SERIES can support one 2.5” HDD drive bay (SATA DOM is available for option) and DDR3 memory up to 4GB. The myriad of I/O ports located on the main system box includes two 10/100/1000 Ethernet LAN ports, four USB ports (2x USB 3.0, 2x USB 2.0), four serial ports for MPX-MD 150/185 (3x RS232, 1x RS232/422/485), VGA, Audio-In, built-in camera (optional for 12”/15”/18.5”), built-in RFID (By Project) and one built-in SATA DOM for flexible expansion capability. For MPX-MD 150/185, two RS-232 Ports can be optioned to four RS-232 Ports when required.

1.2 Specifications

SYSTEM

CPU

- Support Intel Atom D2550 Processors (Dual Core 1.8 GHz/ 1M Cache)
- Intel D2550+NM10 Express Chipset

System Memory

- 1 x 204 pin 1.5V DDRIII SODIMM socket, total up to 4GB

Graphics

- Intel Graphics Media accelerator 3650
- Support dual display mirroring/multiple mode

Network

- 2x Realtek RTL8111C 10/100/1000 Base-T fast Ethernet
- 802.11g Wireless LAN module (Optional)
- Built in 3GS Module (Optional)

Audio

- AC97 Codec (Line-in/Line-out/Mic) / 2W AMP Output

Power Supply

- DC 12V~24V Wide Range Input

OS

- Windows XP/XPE/VISTA /WinCE/Win 7/Linux

LED

- Power

DISLAY

LCD & Max. Resolution

- 8.4” LED TFT LCD: 800 x 600
- 10.4” LED TFT LCD: 800 x 600
- 12.1” LED TFT LCD: 1024 x 768
- 15” LED TFT LCD: 1024 x 768
- 18.5” LED TFT LCD: 1366 x 768

Touch Type

- 5-wire Analog resistive

Brightness

- 8.4” LCD: 450 cd/m²
- 10.4” LCD: 400 cd/m²
- 12.1” LCD: 500 cd/m²
- 15” LCD: 400 cd/m²
- 18.5” LCD: 300 cd/m²

STORAGE DEVICE

HDD

- 1x 2.5” SATA HDD

SATA DOM

- 16GB/32GB/64GB Half Slim SSD (Optional)

I/O PORTS

USB

- MPX-MD A 840/104/120/150/185, B 840/104
    - 4 x USB (2x USB 3.0 & 2x USB 2.0 ports)
- MPX-MD B 150/185
    - 8 x USB 2.0 ports (2x USB 3.0 & 6X USB 2.0 ports)
- MPX-MD B 120
    - 6 x USB 2.0 ports (2x USB 3.0 & 4X USB 2.0 ports)

Serial Ports

- MPX-MD A 150/185
    - 4 x DB-9 (COM1/2/3/4)
    - RS232: COM1/3/4
    - RS232/422/485: COM2
        - Support pin9 +5V/12V selection by jumper
- MPX-MD B 840/104/120, A 840/104/120

- 2x DB-9 (COM 1/2)
- RS232: COM 1
- RS232/422/485: COM2
    - Support pin9 +5V/12V selection by jumper

LAN

- 2 x LAN port (Gigabit LAN 10/100/1000)

Audio

- 1 x Line-in

VGA

- 1 x DB15 VGA Interface for dual display

MECHANICAL & ENVIRONMENTAL

Dimension

- MPX-MD 840: 218.5 x 284 x 45.4 (L x W x H mm)
- MPX-MD 104: 218.5 x 284 x 45.4 (L x W x H mm)
- MPX-MD 120: 264 x 330 x 48 (L x W x H mm)
- MPX-MD 150: 307 x 390 x 51 (L x W x H mm)
- MPX-MD 185: 307 x 495 x 55 (L x W x H mm)

Weight

- MPX-MD 840:3.5 KG
- MPX-MD 104:3.5 KG
- MPX-MD 120: 4 KG
- MPX-MD 150: 5.5 KG
- MPX-MD 185: 6.5 KG

ENVIRONMENT

EMC & Safety

- CE, FCC

Temperature & Humidity

- MPX-MD 840/104/120/150/185
    - Operating: -10~70°C/Storage: -30~80°C
    - Humidity: 10%~90%

Specifications are subject to revision or update without notice.

Chapter 2 USING THE SYSTEM

2.1 Identifying the System

2.1.1 Back Top view

MPX-MD 150

2.1.2 Back Bottom view

MPX-MD 150 A

2.2 First Time System Setup

To set up MPX-MD Series for the first-time, you should have the following items ready. These items are either included in the accessory box or available from your local computer parts store.

- MPX-MD Series Utility CD (Included)
- Power cord (Included)
- PS/2, AT or USB Keyboard (Not included)
- PS/2 or USB Mouse (Not included)
- USB CD-ROM Drive (Not included)
- Operating System (OS) Installation CD (Not included)

2.2.1 Hardware Installation Procedure

(Prior to turning the power on)

1. Connect a PS/2 keyboard or AT keyboard to the PS/2 keyboard port, or a USB keyboard to a USB port. If you are using an AT keyboard, you need an adapter (AT to PS/2 KB) for this connection.
2. Connect the PS/2 mouse to the PS/2 mouse port, or a USB mouse to a USB port.
3. Connect the male end of the power cord to an electrical outlet.
4. Connect the USB CD-ROM drive.
5. Connect the female end of the power adapter cord to the AC inlet located at the rear side of the MPX-MD Series.

2.2.2 System BIOS Setup

If you are a commercial user, the MPX-MD SERIES should have been set up and configured by your distributor already. In the case where you may find it necessary to change some system configuration information, you will need to run the Basic Input Output System (BIOS) setup program. Under the following conditions, the CMOS settings may be changed:

1. The system is starting and being configured for the first time with new components.
2. The hardware devices attached to the MPX-MD SERIES system have been changed.
3. The CMOS memory has lost power and the configuration information has been erased.

The BIOS setup program is stored in ROM, which can be accessed by pressing <**DEL**> key on the keyboard immediately when the system is powered on. In order to

retain the specified setup information when the system power is turned off, the system setup information is stored in a battery-backed CMOS RAM. The battery is to ensure the settings will not be erased when the computer is turned off or reset. When the computer is powered on again, the system will read the settings stored in the CMOS RAM and compare them to the equipment check conducted during the power on self-test (POST). If any error or mismatch occurs, an error message will be shown on the screen and the computer will be prompted to run the setup program.

2.2.3 Operating System and Driver

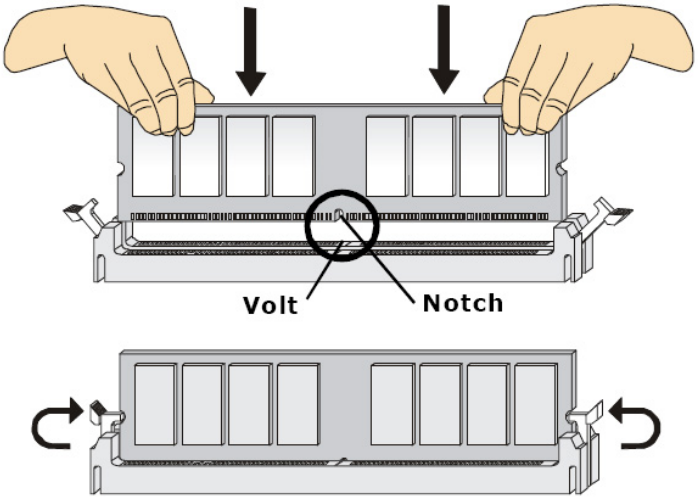
The standard MPX-MD Series system may not be equipped with an operating system (OS). If you are a commercial user, the system is likely to have been pre-installed with a proper operating system and software drivers by your dealer or system integrator. If the system is not pre-installed with any system OS and drivers or you intend to install your preferred ones, you will need to load an OS and software into the system.

1. Use the External USB CD-ROM/DVD-ROM Drive to load an OS from a bootable CD. Recent releases of operating systems include setup programs that load automatically and guide you through the installation. You can also refer to your OS user manual for instructions on formatting or partitioning the hard disk drive before any software installation.
2. Install software drivers for your operating system and any peripherals that are connected. The MPX-MD Series Utility CD includes software drivers for Chipset, Audio, LAN, Touch screen, VGA Display, Camera, 3GS Module and Wireless drivers. See driver installation chapters for more information.

2.3 Installation Memory Module

The MPX-MD Series main board provides one 204-pin SODIMM slot. The socket supports up to 4GB DDR3. When installing the Memory device, please follow the steps below：

1. Detach the main system box from the system.
2. Locate the SODIMM slot in the back side of the system box.
3. Unlock a SODIMM slot by pressing the retaining clips outward.
4. Align a SODIMM on the socket such that the notch on the SODIMM matches the break on the slot.
5. Firmly insert the SODIMM into the slot until the retaining clips snap back in place and the SODIMM is properly seated.



Available DDR3 configurations refer to the table below for available DDR3 configurations on the mainboard.

Slot	Module Size	Total
SODIMM1	1GB, 2GB, 4GB	1GB-4GB
Maximum supported system memory		4GB

Chapter 3 TOUCH SCREEN

3.1 Introduction

The MPX-MD Series are installed with a 5-wire analog resistive touch screen. The touch screen panel turns the flat-panel display into a dynamic graphical user interface (GUI) and data entry device. The touch screen represents a replacement to needing a keyboard and mouse to interface with the computer. People associate actions or functions with visual images better than a combination of keystrokes or button clicks. Using a touch panel is more entertaining for the operator and actually requires less brain activity than traditional control devices.

The built-in touch screen system has three main components: a clear solid glass screen formed to match the shape of a display, a sophisticated electronic controller, and a software driver.

3.2 Specifications

MPX-MD Series supports HIGGSTEC touch panel. Please check specifications as following.

Input Method	Finger, gloved hand, or touch stylus.
Optical Transmittance	80% ± 3%
Operating Force	Stylus=R0.8, ≦ 50g
Environmental/ Relative Humidity	Operating: -10°C to 70°C, 20 ~ 80% RH. Storage: -40°C to 80°C, 10 ~ 85% RH.
Constant Temperature/ Humidity	70°C /90%RH, 500 hrs, allow panel stays in normal environment for 4 hrs
Surface Durability	3H pencil, pressure 1N/45°
Durability	Knock Test: 35,000,000 times

3.3 Touch Screen Software Driver

Touch screens configured with the MPX-MD Series will require software drivers to be installed to enable the touch screen functionality. The driver software scales the absolute coordinates received from the touch screen controller into translated screen coordinates, using the calibration points obtained with the Video Alignment program included with the driver software. The driver also performs other operations as directed by the application.

3.4 Touch Screen Care and Clean

Only use soft non-abrasive lint free wipes with Isopropyl 99% to clean dirt or stains found on the touch panel. Always dampen the wipes and then clean the touch panel. Chemical liquids with strong acidic base will damage the touch screen and void the warranty.

3.5 Troubleshooting

If you experience operational difficulties with the touch screen system either during or after installation, the following sections will help you to determine the source of problems.

The first step in troubleshooting is to determine whether the problem is related to the display, software, or hardware. And please pay attention to special notes as follows.

- Do not confuse display problems with touch screen problems, as the two issues are unrelated.
- Software problems are determined by a basic hardware functionality test. If the hardware transmits touch coordinates correctly, then the problem is probably with the driver or application software.
- Hardware problems may be caused by the touch screen, controller, cabling, power supply, or the integration of the touch screen components in the display.

3.5.1 Display Problems

If the display has some problems (such as no video, no horizontal or vertical synchronization, raster non-linearity, etc.), remember that the video function of the display and the touch screen installed on the display are separated systems. Therefore, problems with the display should be treated as display problems, not touch screen problems. Diagnostic procedures and any possible corrections for display problems should be performed.

3.5.2 Video Alignment Problems

If the touch screen is responding and the data is linear, but it does not respond at the appropriate zone, try to align the video. Use **Touchkit** program.

3.5.3 Software Troubleshooting

Before beginning software troubleshooting, verify that the touch screen hardware is working normal for serial controllers by running the touchscreen program. If the touch screen is operating, then the problem may be with the driver software, the

application software, or a conflict with other hardware or software. (The problem may also be due to incorrect Video Alignment of touch screen).

3.5.4 Hardware Troubleshooting

The touch screen system hardware troubleshooting may require analysis of the touch screen, controller, cables, power supply, and the integration process. To start with the controller would be the best. Use the controller power-on diagnostics that are displayed when the touch panel utility driver software is loaded to check for specific faults. Also check whether the controller is transmitting any touch data.

No touch data:

When no touch data is reported, the problem may be the touch screen, controller, or cabling. If the features of controller power-on or LED do not identify the problem, you can use individual system components what are available to be instead.

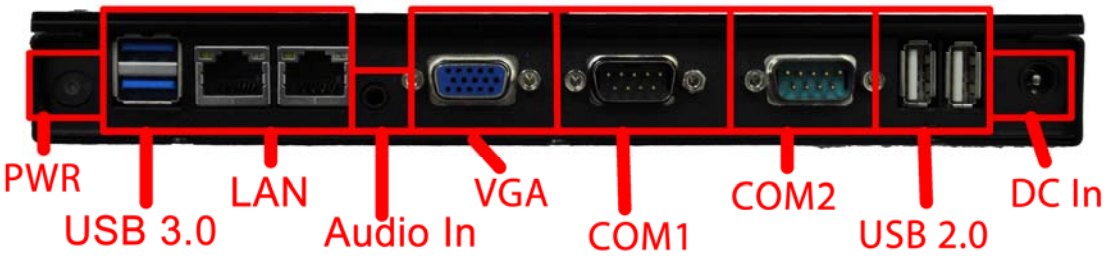
Intermittent touch data:

If the system is reporting touch data at a slow or varying rate, the problem may be caused by a low signal strength or excessive noise in the system. And when the touch screen is not touched but it shows the touch data often caused by excessive system noise.

Chapter 4 INTERFACE

This chapter describes the design features of the system.

4.1 External Connector on Main System Box



- **Mouse and Keyboard**

  USB Mouse and Keyboard are to be used unless PS/2 ports are specifically requested for project use.

- **Serial Port**

  The serial port is a 16550a high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

- **VGA Port**

  The DB15-pin female connector is connecting to LCD panel.

- **USB Ports**

  USB ports are for attaching USB devices such as keyboard, mouse, or other USB-compatible device.

- **LAN**

  The standard RJ-45 LAN jack is for connection to Local Area Network. You can connect a network cable to it.

- **Audio Ports**

  Line In is used for external CD player, or other audio devices. Rear-Surround Out in 4/5.1/7.1 channel mode. Line out, is a connector for speakers or headphones. Mic, is a connector for microphones. Center/Subwoofer Out in 5.1/7.1 channel mode.

4.2 Detach Main System Box from System

1) **Flip the System to the back and have the system box face towards you.**
2) **Remove L and R screw in the side of the system box like shown in the following picture.**

3) **Once the locking screws are removed, pull the main system box downwards until the connector is separated like the following picture.**

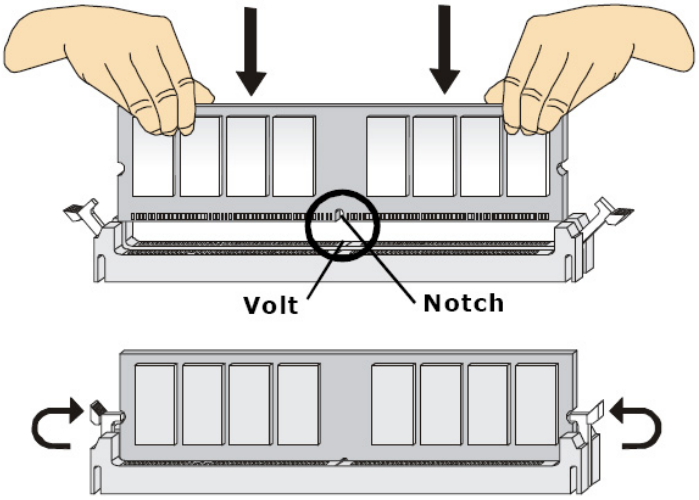
4) **Then pick up the system box and ensure the alignment screws are free from the side brackets like shown in the following pictures.**

5) **To replace and reinstall the Main system box, please reverse the above steps.**

4.3 Install/Upgrade Memory

1) **Follow the steps from section 4.2 to remove the main system box.**
2) **Once removed, flip the main system box to have the back side facing towards you to access the quick maintenance opening for the memory module. (Like shown in the following picture.)**

3) **Unlock a SODIMM slot by pressing the retaining clips outward.**
4) **Align a SODIMM on the socket such that the notch on the SODIMM matches the break on the slot.**
5) **Firmly insert the SODIMM into the slot until the retaining clips snap back in place and the SODIMM is properly seated.**

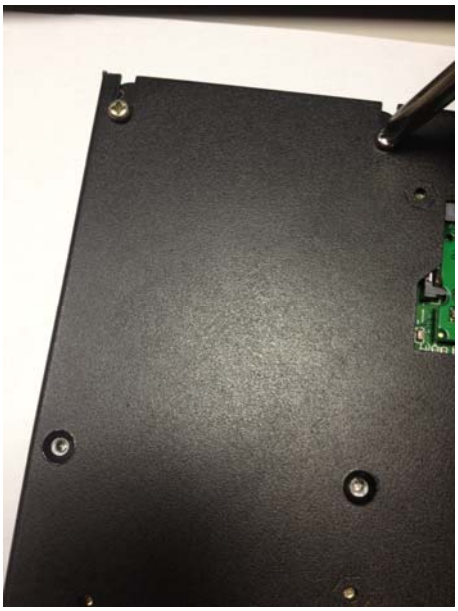


6) **Reverse the steps from section 4.2 to re-attach the main system box to the system.**

4.4 Install/Swap HDD

1) **Follow the steps from section 4.2 to remove the main system box.**
2) **Once removed, flip the main system box to have the back side facing towards you to access the quick maintenance HDD on the left top corner.**
3) **Remove the HDD bottom screw completely like shown in the following picture.**

4) **Slightly Loosen the HDD top locking screw completely like shown in the following picture.**



5) **Push outward on the top locking screw that was loosened in step 4 to remove HDD. (Like shown in the following pictures.)**

6) Once HDD swap is completed, reverse the step from section 4.2 to re-attach the main system box back to the system.

4.5 Install Half Slim SSD (For D2550 only)

1) **Follow section 4.2 to detach the main system box from the system.**
2) **Flip the main system box to the back side to gain access to the quick maintenance opening for the SSD slot. (Like Shown in the following picture)**

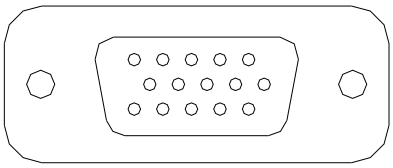
3) **Swap/Install the Half Slim SSD.**
4) **Reverse the steps from section 4.2 to re-attach the main system box to the system.**

4.6 Install 3GS Sim Card (Optional)

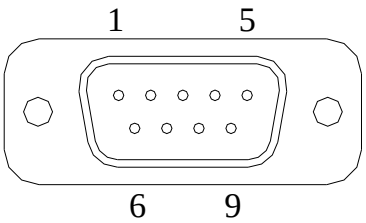
1) **Follow section 4.2 to detach the main system box from the system.**
2) **Flip the main system box to the top side to gain access to the 3GS SIM card slot. (Like shown in the following picture)**

3) **Insert the SIM card and reverse the steps from section 4.2 to re-attach the main system box to the system.**

4.7 VGA1: VGA CRT Connector: Standard 15 pin D-SUB Connector



4.8 COM2: RS232/RS422/RS485 Serial Port Connector: Standard 9 pin D-SUB Connector



RS-232 Mode (Select by CMOS Setup)

Signal Name	Pin	Pin	Signal Name
DCD	**1**	**2**	RXD
TXD	**3**	**4**	DTR
GND	**5**	**6**	DSR
RTS	**7**	**8**	CTS
RI(Function Select by JP1)	**9**		

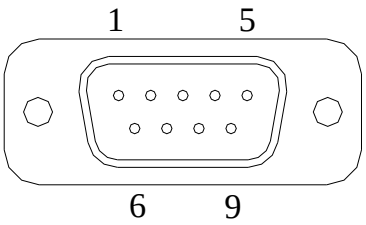
RS-422 Mode (Select by CMOS Setup)

Signal Name	Pin	Pin	Signal Name
422TXD-	**1**	**2**	422RXD+
422TXD+	**3**	**4**	422RXD-
GND	**5**	**6**	NC
NC	**7**	**8**	NC
+12V/+5V(Function Select by JP1)	**9**		

RS-485 Mode (Select by CMOS Setup)

Signal Name	Pin	Pin	Signal Name
485Data+	**1**	**2**	NC
485Data-	**3**	**4**	NC
GND	**5**	**6**	NC
NC	**7**	**8**	NC
+12V/+5V(Function Select by JP1)	**9**		

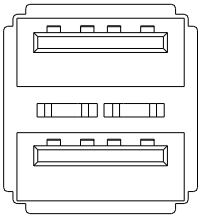
4.8.1 COM3: RS232 Serial Port Connector: Standard 9 pin D-SUB Connector



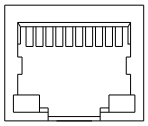
RS-232 Mode (Select by CMOS Setup)

Signal Name	Pin	Pin	Signal Name
DCD	**1**	**2**	DSR
RXD	**3**	**4**	RTS
TXD	**5**	**6**	CTS
DTR	**7**	**8**	RI(Function Select by JP1)
GND	**9**		

4.9 USB1: USB 2.0/3.0 Port 1,2: Standard USB Type-A Connector

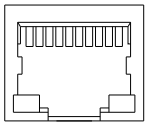


4.10 LAN1: Giga bit Ethernet Connector: Standard RD-45 with LED



LED	Signal Name
Yellow	Link & Active
Green	10/100M LAN Speed
Orange	Giga LAN Speed

4.10.1 LAN2: Giga bit Ethernet Connector: Standard RD-45 with LED



LED	Signal Name
Yellow	Link & Active
Green	10/100M LAN Speed
Orange	Giga LAN Speed